

Key Findings and Public Health Messages

- The California Department of Public Health (CDPH) received reports of 7,080 cases of giardiasis with estimated symptom onset dates from 2009 through 2012. This corresponds to an average annual incidence rate of 4.73 cases per 100,000 Californians.
- Giardiasis incidence rates were stable during the 2009-2012 surveillance period. Incidence rates ranged from 4.59 per 100,000 (1,724 cases) in 2011 to 4.83 per 100,000 (1,791 cases) in 2009.
- Average annual giardiasis incidence rates during the surveillance period were highest among children 1 to 4 years of age (9.75 per 100,000) and adults 35 to 74 years of age (5.08 per 100,000).
- No outbreaks of giardiasis were reported to have occurred during 2009 through 2012.
- To prevent and control giardiasis, people should practice good hygiene, particularly at childcare facilities, avoid drinking or swallowing untreated or poorly treated water or use ice made from such water, avoid eating raw or uncooked foods when traveling in countries with poor food and water treatment, and prevent contact and contamination with feces during sex.

Background

Giardiasis is a worldwide diarrheal disease caused by the parasite *Giardia intestinalis* (a.k.a. *Giardia lamblia* or *Giardia duodenalis*). In the United States, giardiasis is the most frequently diagnosed intestinal parasitic disease,¹ with an estimated 1.2 million cases occurring annually.² In recent years, the incidence rate of giardiasis cases reported to the US Centers for Disease Control and Prevention (CDC) appears to be decreasing.³ *Giardia* may be found in water, soil, food, or on surfaces that have been contaminated with feces from infected persons or animals. People become infected after accidentally swallowing *Giardia* by drinking untreated contaminated surface

or well water, by eating contaminated foods, or by having contact with an infected person or contaminated surfaces.

Symptoms of giardiasis include diarrhea, gas, stomach cramps, and dehydration which can lead to weight loss. Illness begins 1 to 3 weeks after exposure and can last 2 to 6 weeks.¹ Some infections, however, are asymptomatic.

This report describes the epidemiology of confirmed and probable giardiasis infections in California with estimated symptom onset dates from January 1, 2009 through December 31, 2012 reported by December 2014. Data for 2012 are provisional and may differ from data in future publications. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to the *Technical Notes*.⁴ The epidemiologic description of giardiasis for the 2001-2008 surveillance period can be found in the *Epidemiologic Summary of Giardiasis in California, 2001-2008*.⁵

California reporting requirements and surveillance case definitions

California Code of Regulations, Title 17, requires health care providers to report suspected cases of giardiasis to their local health department within seven calendar days of identification or immediately by telephone if an outbreak is suspected. Laboratories are also required to report laboratory testing results suggestive of *Giardia* infection to either the California Reportable Disease Information Exchange (CalREDIE) (via electronic laboratory reporting) or the local health department; reporting must occur within one working day after the health care provider has been notified.

Local health officers are required by regulation to report to CDPH cases of giardiasis. CDPH counted cases that satisfied the CDC/Council of State and Territorial Epidemiologists' surveillance case definition of a confirmed or probable case. Through 2010, CDC defined a confirmed case as one with laboratory detection of *Giardia intestinalis* organisms, antigen, or DNA in stool, intestinal fluid, tissue samples, biopsy specimens or other biological sample. Beginning in 2011, laboratory detection of *Giardia intestinalis* along with clinically-compatible illness (as characterized by gastrointestinal symptoms such as diarrhea, abdominal cramps, bloating, weight loss, or malabsorption) was necessary

to classify a case as confirmed. During the surveillance period, a probable case was defined as one with clinically-compatible illness and an established epidemiologic link to a laboratory-confirmed case.⁶

Epidemiology of giardiasis in California

CDPH received reports of 7,080 cases of giardiasis with estimated symptom onset dates from 2009 through 2012. This corresponds to an average annual incidence rate of 4.73 cases per 100,000 Californians. Following a decline in giardiasis incidence rates during the 2001-2008 surveillance period, rates were stable during the 2009-2012 surveillance period. Incidence rates ranged from 4.59 per 100,000 (1,724 cases) in 2011 to 4.83 per 100,000 (1,791 cases) in 2009 [Figure 1].

Average annual giardiasis incidence rates for the surveillance period were highest among children 1 to 4 years of age (9.75 per 100,000) and adults 35 to 74 years of age (5.08 per 100,000, not shown) [Figure 2]. The ratio of male to female cases was 1.7:1.0. Incidence rates by race/ethnicity were not calculated due to the substantial portion of missing data (47.6 percent). However, giardiasis cases with complete data reported White non-Hispanic race/ethnicity more frequently than would be expected and Hispanic ethnicity less frequently than would be expected based on the overall demographic profile of California [Figure 3].

County-specific incidence rates during the surveillance period ranged from 0 to 35.86 per 100,000 [Figure 4]. Average annual incidence rates for the surveillance period were 1.5 times higher in Northern California (5.77 per 100,000) than in Southern California (3.93 per 100,000). San Diego (8.08 per 100,000), Bay Area (8.01 per 100,000), and Far North (5.87 per 100,000) regions reported the highest average annual incidence rates during the surveillance period.

No waterborne or foodborne outbreaks of giardiasis were reported to CDPH to have occurred during the 2009-2012 surveillance period.

Comment

Incidence rates of reported giardiasis infection among Californians were stable from 2009 through 2012. *Giardia* infections are often not diagnosed and not reported, so rates may be underestimated.^{2,3}

The age distribution of reported cases incident in California during 2009-2012 remained fairly consistent

Figure 1. California giardiasis case counts and incidence rates by estimated year of illness onset

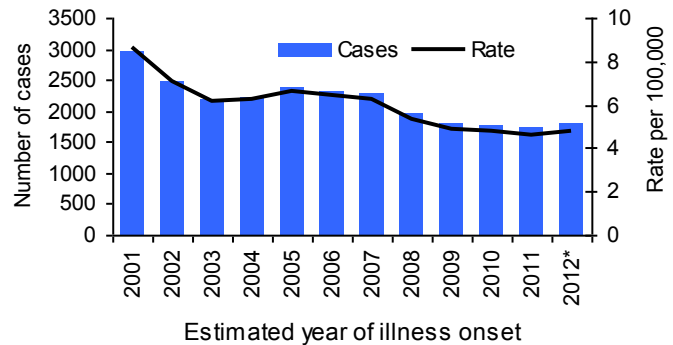


Figure 2. California giardiasis incidence rates by age group and estimated year of illness onset

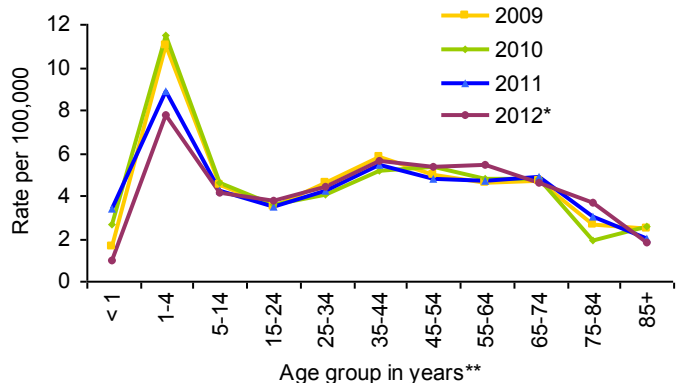
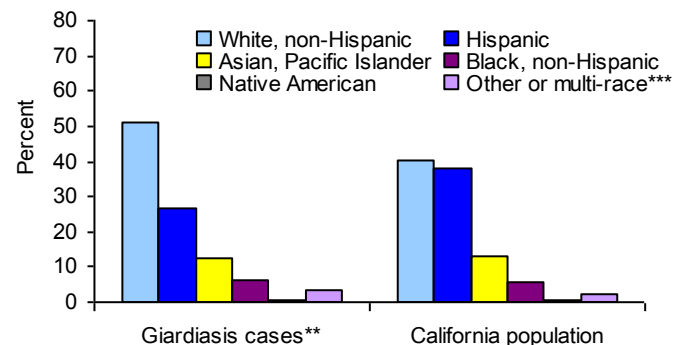


Figure 3. California giardiasis cases and population by race/ethnicity, 2009-2012



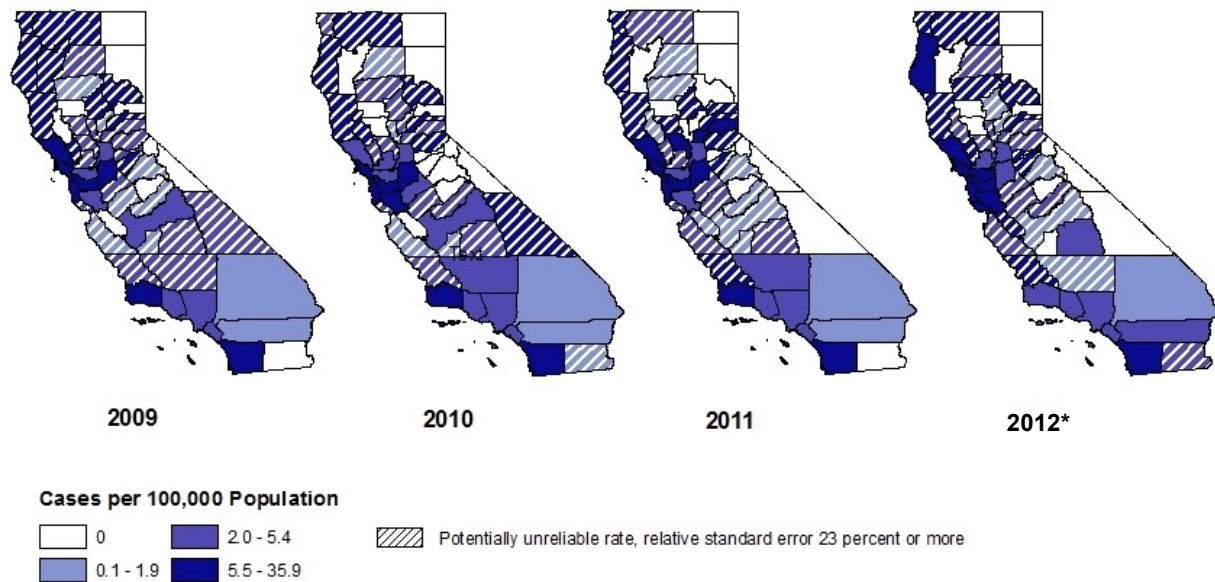
Notes for Figures 1-4

*2012 data are provisional

**Unknowns were excluded

***Includes cases who identified 'other' as their race and Californians ('population') who identified more than one race

Figure 4. California county-specific giardiasis incidence rates by estimated year of illness onset



with that of 2001-2008.⁵ Comparable to national trends, California children 1 to 4 years of age experienced the highest rates of giardiasis.³

To prevent and control infection with *Giardia*, people should practice good hygiene, particularly at child-care facilities, avoid drinking or swallowing untreated or poorly treated water or use ice made from such water, avoid eating raw or uncooked foods when traveling in countries with poor food and water treatment, and prevent contact and contamination with feces during sex.⁷

⁵Epidemiological Summaries of Selected General Communicable Diseases in California, 2001-2008: Giardiasis. <http://www.cdph.ca.gov/data/statistics/Pages/EpiSummariesCDsCA-01-08.aspx>

⁶National Notifiable Diseases Surveillance System, Case Definitions, Giardiasis. Centers for Disease Control and Prevention, 2015. <http://wwwn.cdc.gov/nndss/conditions/giardiasis/>

⁷Centers for Disease and Prevention. Parasites – *Giardia*. Prevention & Control: General Public. <http://www.cdc.gov/parasites/giardia/prevention-control-general-public.html>

References and resources

¹Centers for Disease Control and Prevention. Parasites – *Giardia*. <http://www.cdc.gov/parasites/giardia/>

²Scallan E, Hoekstra RM, Angulo FJ et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis*. 2011 Jan; 17(1):7-15.

³Painter JE, Gargano JW, Collier SA et al. Giardiasis surveillance -- United States, 2011-2012. *MMWR Surveill Summ*. 2015 May 1;64 Suppl 3:15-25.

⁴Epidemiologic Summaries of Selected General Communicable Diseases in California, 2009-2012: Technical Notes. <http://www.cdph.ca.gov/programs/ss/ Documents/TechnicalNotes01-08and09-12.pdf>

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